

A New Species of *Cryptocellus* (Arachnida: Ricinulei) from Cuba

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Abstract: Both sexes of the epigean ricinuleid *Cryptocellus paradoxus*, new species, from Cuba are described. This is the first record of an island ricinuleid.

INTRODUCTION

For many years the order Ricinulei has been regarded as one of the most obscure groups of arthropods. Recently several large ricinuleid populations have been found in Mexican caves and this has resulted in substantial advances in our understanding of their ecology (Mitchell, 1970), morphology (Pittard and Mitchell, 1972), and behavior (Cooke, 1971). In addition three new Mexican cave species have been described (Gertsch, 1970). The description of *Cryptocellus pelaezi* by Coronado (1970) and the recognition by Beck and Schubart (1968) that *C. simonis* Hansen and Sørensen is only the male of *C. foedus* Westwood bring the number of published species of *Cryptocellus* to 20, and at least four additional epigean species from Central America have been recognized (Cooke, in preparation).

Hitherto all known ricinuleids have come from continental land masses—*Cryptostemma* in West Africa and *Cryptocellus* in the tropical Americas. Hence the discovery of an isolated island species, *Cryptocellus paradoxus* sp. n. in Cuba, is an event of considerable interest. As can be seen in the accompanying description, *C. paradoxus* is distinctive in several respects, but the most curious feature is the structure of the sperm-transfer organs on leg III of the male. Whereas in all other known species the tarsal process (Cooke, 1967; Pittard and Mitchell, 1972) is a long, bifurcated structure lying within the protective sweep of the lamina cyathiformis, in *C. paradoxus* it is a small trowel-like stump. It may be that in the unique male holotype the tarsal process has been damaged and that what remains is only the basal portion. However, as both left and right sides are identical it seems highly improbable that such an injury could occur accidentally. Alternatively, loss of the distal parts may have occurred during copulation, for it is now known (Cooke, 1971) that the tarsal processes are inserted into the female simultaneously. However, there is no evidence of physical damage on either the left or right tarsal process of the holotype and neither is there any trace of an erstwhile junction. The form of the first tarsomere also lends weight to the idea that the

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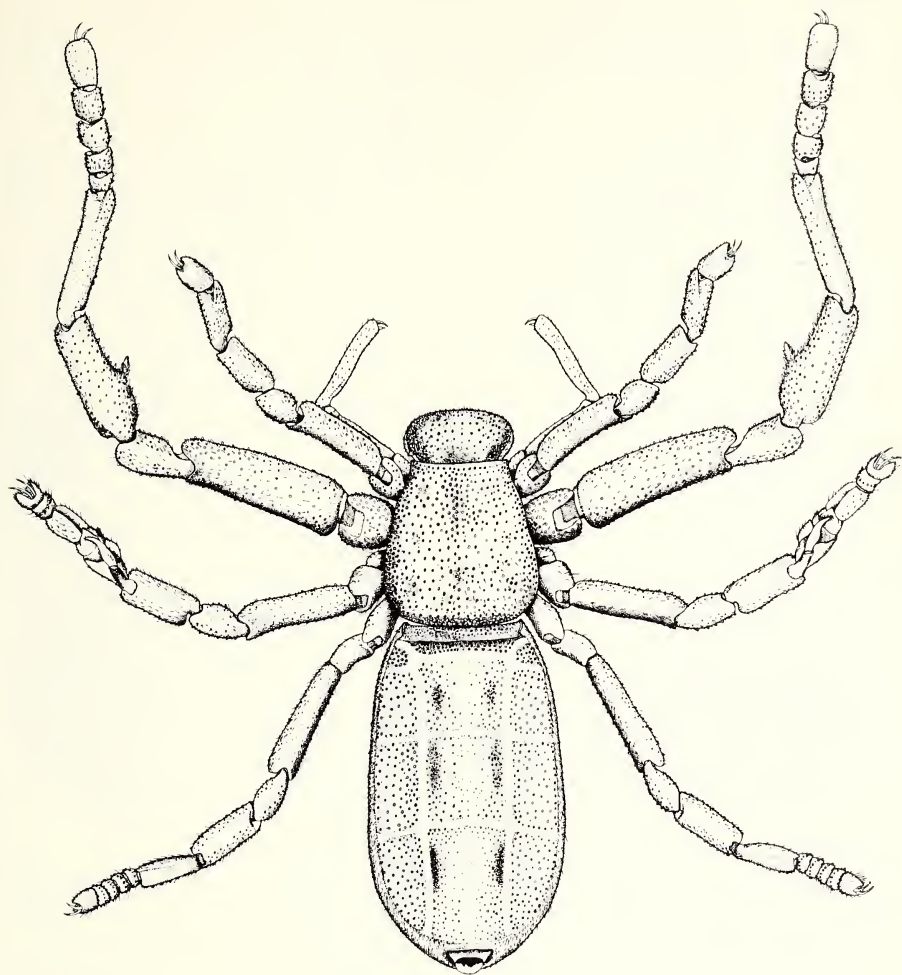
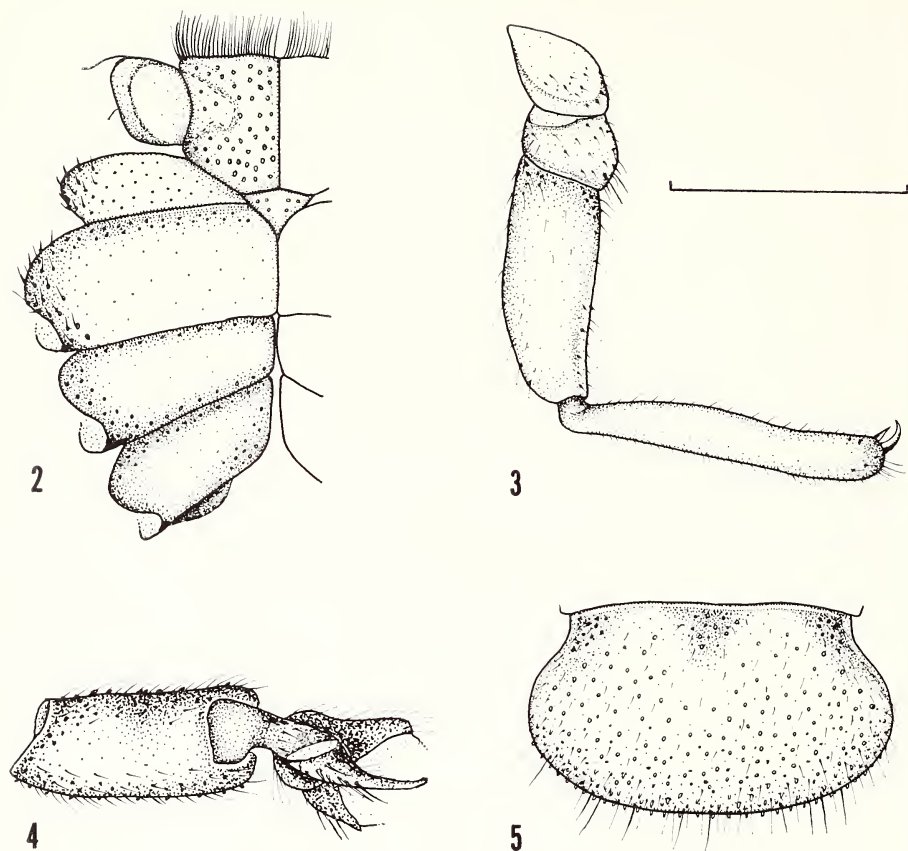


FIG. 1. *Cryptocellus paradoxus*, new species. Male holotype. Scale line equals 1.0 mm.

tarsal process is naturally atrophied in this species. In other ricinuleids the lamina cyathiformis of tarsomere 2 apparently acts as a shield to protect the long, delicate tarsal process and its accessory member, while tarsomere 1 is small and simple. In *C. paradoxus* tarsomere 1 is similarly drawn up into a spoonlike structure, though smaller than the lamina cyathiformis, and neatly accommodates the squat tarsal process with its delicate, leaflike tip. A possible interpretation is that the tarsal process has become secondarily simplified



FIGS. 2 to 5. *Cryptocellus paradoxus*, new species. Male holotype. 2. Sternal region. 3. Left pedipalp. 4. Left leg III, dorsal view of tibia and metatarsal process. 5. Cucullus. Scale line equals 0.5 mm.

and reduced so that it is no longer protected adequately by the lamina cyathiformis and in consequence there has been pressure for the enlargement of tarsomere 1 to take over the role of the redundant lamina. Until further material becomes available to provide some knowledge of the mechanism of sperm transfer in this species, no definite conclusion can be reached on whether the tarsal process of the holotype is normal or not.

Cryptocellus paradoxus, new species

DIAGNOSIS

Medium-sized species with distinctively large second pair of legs and unnotched post-abdomen. The females may be distinguished from *C. relictus* Chamberlin and Ivie, *C. spinotibialis* Goodnight and Goodnight, and *C. mitchelli* Gertsch on the grounds of size,

cheliceral dentition, and shape of the cucullus. Males are readily recognized by the large spur on tibia II and by the form of the copulatory apparatus on leg III, particularly the enlarged first tarsomere.

DESCRIPTION OF HOLOTYPE

Body length, 3.32 mm.; carapace length, 1.10 mm.; carapace width, 1.04 mm.; abdomen length, 2.00 mm.; abdomen width, 1.32 mm.; cucullus length, 0.46 mm.; cucullus width, 0.72 mm.; pedipalp femur length, 0.54 mm.; pedipalp tibia length, 0.75 mm.

Carapace (fig. 1), longer than wide, dilated posteriorly and with slight median depression; color uniformly reddish brown; surface covered in small, well-spaced tuberculate granules that under some lighting conditions appear to possess a minute white reflective tip; uniformly clothed in short, fine translucent hairs. Cucullus (fig. 5), wider than long, same color as carapace and similarly covered in tuberculate granules and fine translucent hairs. Chelicerae with six teeth of subequal size on both fingers, those on the fixed finger increasing slightly in size distally. Abdomen (fig. 1), proportionately quite long with conspicuous, well-spaced tergal plates; same color as carapace and bearing similar granules and hairs; postabdominal turret with smooth unindented margin; penis similar to that of *C. pelaezi* Coronado. Pedipalps (fig. 3), small, pale yellow-brown, devoid of granules on the distal segments but with scattered pale, fine hairs; claws smooth. Legs same color as carapace but legs II rather darker; covered in fine, pale hairs and scattered granules, particularly on anterior pairs; tibia II (fig. 1) with large spur and numerous tubercles ventrally; tarsomeres of leg II increasing in size distally, fifth tarsomere 0.36 mm. in length, equal to the combined lengths of second and third tarsomeres. Copulatory apparatus (figs. 4, 6, 7) on leg III distinctive, somewhat atypical of the order; first tarsomere strongly developed and drawn up posteriorly like lamina cyathiformis of second tarsomere but smaller; tarsal process short, club-shaped and undivided.

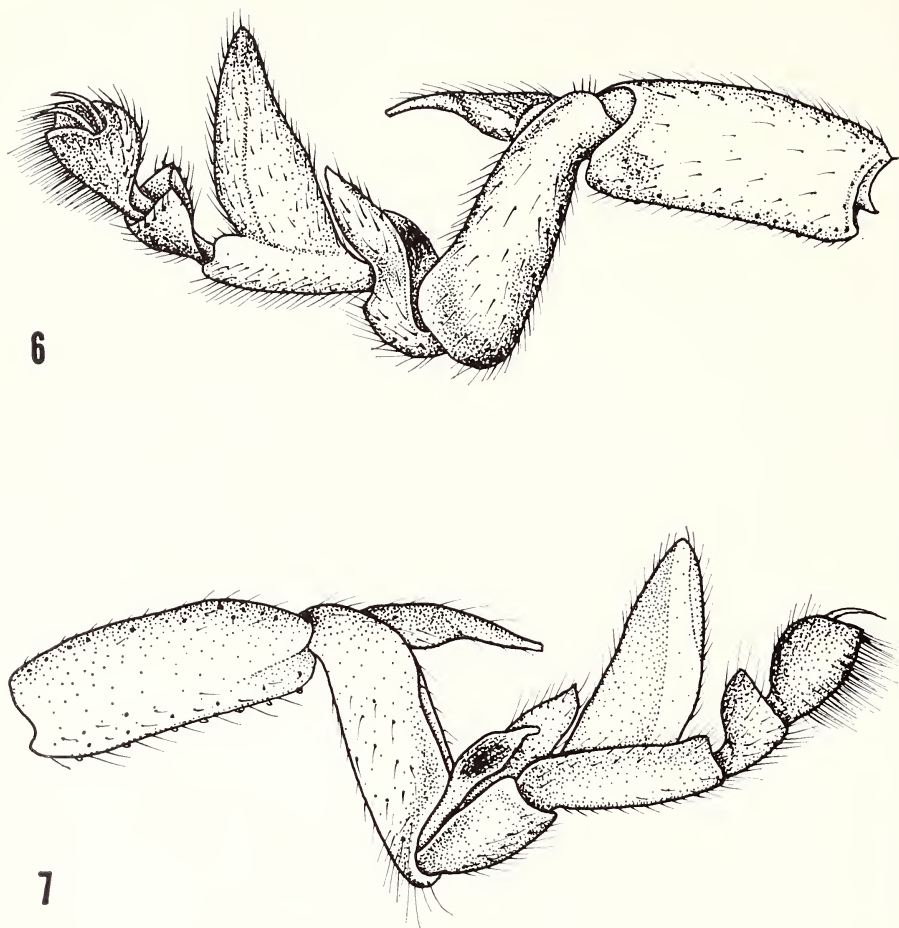
	Femur	Patella	Tibia	Metatarsus	Tarsomere(s)
I	0.58	0.34	0.40	0.60	0.28
II	1.06	0.52	0.72	0.90	1.04
III	0.72	0.36	0.36	0.52	0.75
IV	0.73	0.34	0.34	0.49	0.45
	I	II	III	IV	
Femur diameter	0.18	0.34	0.18	0.14	

N.B. Left leg I of holotype significantly shorter than right and presumed to be incompletely regenerated following injury.

DESCRIPTION OF FEMALE ALLOTYPE

Body length, 3.94 mm.; carapace length, 1.34 mm.; carapace width, 1.24 mm.; abdomen length, 2.60 mm.; abdomen width, 1.60 mm.; cucullus length, 0.55 mm.; cucullus width, 0.88 mm.; pedipalp femur length, 0.73 mm.; pedipalp tibia length, 1.02 mm. General appearance very similar to male holotype with following differences: anterior edge of cucullus slightly more indented; pedipalps substantially larger, tibia proportionately more slender; tibia II without spur but with well-developed tubercles ventrally.

	Femur	Patella	Tibia	Metatarsus	Tarsomere(s)
I	0.63	0.42	0.42	0.70	0.30
II	1.15	0.58	1.00	1.00	1.20
III	0.80	0.40	0.45	0.60	0.46
IV	0.84	0.40	0.50	0.60	0.57
	I	II	III	IV	
Femur diameter	0.23	0.33	0.22	0.18	



FIGS. 6 and 7. *Cryptocellus paradoxus*, new species. Left leg III of male holotype. 6. Posterior view. 7. Anterior view. Scale line equals 0.5 mm.

DESCRIPTION OF FEMALE PARATYPES

Both paratypes fit description of female allotype closely but one specimen larger, thus: carapace length, 1.45 mm.; carapace width, 1.32 mm.; abdomen length, 3.2 mm.; abdomen width, 1.74 mm.; tibia II length, 1.50 mm.; tibia II diameter, 0.45 mm.

MATERIAL

Holotype male and allotype female (deposited in the Instituto de Zoologia, Academia de Ciencias de Cuba, Havana); two paratype females (deposited in the American Museum

of Natural History). Cuba: Oriente Province, Puerto Boniato, Santiago de Cuba, 500 meters, November 6, 1971 (L. F. Armas).

ETYMOLOGY

The specific name refers to the anomalous condition of the tarsal process of the male copulatory apparatus.

HABITAT

In little furrows under stones.

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